

NEW TSETSE-FLIES (*GLOSSINA*) FROM THE BELGIAN CONGO

BY

PROFESSOR R. NEWSTEAD, F.R.S.

AND

MISS ALWEN M. EVANS, M.Sc.

(Received for publication 14 March, 1921)

We have just received from our esteemed colleague, Dr. J. Schwetz, a small collection of tsetse-flies, captured by him in the Belgian Congo. Included in this collection are eleven examples (6 ♂♂, 5 ♀♀) of a new and hitherto undescribed species, all of them taken in the region of the River Kwango, on the frontier of the Portuguese territory. In his letter, dated 20.xii.20, Dr. Schwetz says that he had just visited this region for the first time, and that in returning down the River Kwango by boat he came to a region abounding in this species and *Gl. palpalis*, R.D.

This new species belongs to the 'Fusca Group'¹ of tsetse-flies, and is described below as *Glossina schwetzi*, sp. n., in honour of its discoverer, who has devoted long years of research into the bionomics of this important group of insects, and their relation to human trypanosomiasis.

In a former communication in these *Annals*² attention was called to a variety or race of *Glossina fusca*, Walker, from the Belgian Congo, in which the female armature exhibits a marked deviation from the form of signum found in typical examples from the Gold Coast. The male genital armature of the Congo examples also differ in the form of the harpes from those found elsewhere.

We are convinced, therefore, that we have to deal with a well-marked race of *Glossina fusca*: this we have given varietal rank under the name *congolensis*, var. n.

GLOSSINA SCHWETZI, sp. nov.

Hairs of the third antennal segment about one-sixth to one-seventh the width of the segment. Wings of the female with the thickened portion of the anterior transverse vein darker in colour than the rest. Harpes of the

male divided into three processes, the proximal process short and spine-like. Female with signum of the uterus consisting of a single chitinous plate, the long axis transverse and widest in the distal third.

MALE: Length, 10-11.9 mm.; proboscis, 2.3-2.8 mm.; width of head, 3.2-3.3 mm.; front at vertex, 0.6-0.7 mm.; wing, 11-12.4 mm.

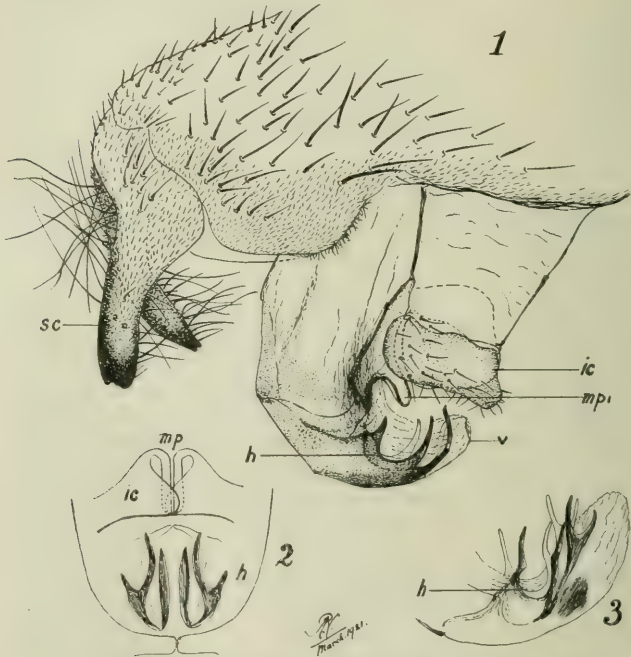


FIG. 1. Male armature of *Glossina schweydti*, sp. n.

s.c., superior clasper; i.c., inferior clasper; m.p., median process; m.p.t., inferior median process; v., vesica; h., harpes.

FEMALE: Length, 12.5 mm.; proboscis, 3.1 mm.; width of head, 3.5-3.6 mm.; front at vertex, 0.75-0.8 mm.; wing, 13.2-13.6 mm.

MALE: Head with the posterior surface 'mouse grey' (Austen)³, antennal cavity pearl-grey, sometimes with a pale vinous tinge; ocellar

Vol. XV, p. 96. Paper by Newstead and Evans. Add to explanation of FIG. 1: '2: Ventral view of the armature of *Glossina schweydti*. 3: Harpes of *Glossina tabaniformis* in profile.'

spot and frontal stripe unicolorous pale brown ; antennae with the distal two-thirds of the third segment infuscated, the rest pale buff ; outstanding hairs on third segment, short, about one-sixth to one-seventh the width of the segment. *Proboscis* bulb pale translucent buff-yellow, the upper lateral margins brownish or orange-brown, ventral median suture proximally, dusky to orange-brown. *Thorax* with the usual distinctive colour and markings ; sterno-pleurae more or less infuscated ; scutellar bristles long. *Abdomen* : Dorsum of first and second segments light brown ; the remaining segments, together with the lateral margins, dark brown (' mummy-brown,' Austen³), the distal angles either unicolorous with the rest of the abdomen or slightly paler. *Legs* : Light or dusky ochraceous-buff ; leg I with the femora infuscated on the upper half of the inner surface, tips of the last two segments dark brown or black ; leg II with the tips of the last two segments generally more strongly marked than in I ; leg III with the last two segments entirely dark brown or black, paler beneath, proximally. *Wings* with the thickened portion of the anterior transverse vein scarcely darker in colour than the rest. *Genital armature* : (fig 1) Harpes (*h*) with three bi-lateral processes ; the proximal process short and distinctly spine-like ; second and third pairs long, slender, and only very slightly widened proximally ; median process scarcely projecting beyond the inferior claspers (*ic*) ; the inferior median process (*mpi*) narrowly elongated and projecting backwards considerably beyond the inferior claspers. Superior claspers (*s.c.*) bluntly bifid.

FEMALE : Colour and pattern similar to that of the male ; but the distal segment of the abdomen usually paler, and the thickened portion of the anterior transverse vein of the wing darker in colour than the rest. *Genital armature* : (fig. 2) External armature possessing no distinctive characters. Signum of the uterus consisting of a single symmetrical chitinous plate of the form shown in the figure, the greatest width being 0.38 mm. Laterally, it bears a pair of black curved thickenings (*a.th*), and sometimes a second pair (*p.th*) lies behind the anterior pair. That portion of the plate posterior to the level of the thickenings is much more heavily chitinised than the anterior portion, in which a large transparent space occurs medianly. The upturned anterior processes (*a.p*) which are a marked feature of the signum tend to slight variation, and are much smaller in one individual than those shown in the illustration.

Belgian Congo : River Kwango, Kasongo Lunda, 24.x.1920, 2 ♀♀ ; River Kwango, near Cuango, 24.x.1920, 4 ♀♀ (' Le soir par terre ') 25.x.1920

3 ♀♀; River Kwango, near Kundi, I.xi.1920, 2 ♂♂ ('Le soir sur chemin')
Dr. J. Schwetz.

In its general external facies the male of this species bears a striking
resemblance to that of *Gl. tabaniformis*, West; the female, on the other



FIG. 2. *Glossina schwetzi*, sp. n. ♀. Signum \times c. 155.

a.p., anterior process; *a.tb.*, anterior thickening; *p.tb.*, posterior thickening.
(Genital fossae not shown.)

hand, owing to the darker colour of the thickened portion of the anterior
transverse vein, might easily pass as a specimen of *Gl. brevipalpis*, Newst.
Both sexes may, however, be readily distinguished from any other members
of the 'Fusca Group' by the strikingly characteristic genital armature.

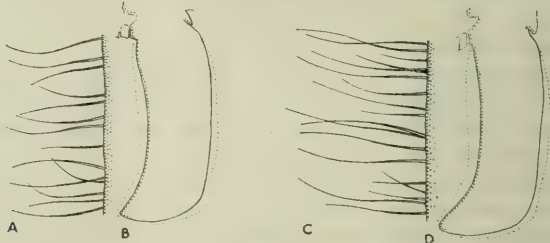


FIG. 3.

Glossina schwetzi, sp. n., *A.*, antennal fringe \times c. 325; *B.*, third segment of antenna \times c. 40.
Glossina tabaniformis, *C.*, antennal fringe \times c. 325; *D.*, third segment of antenna \times c. 40.

Furthermore, the antenna of *Gl. schwetzi* can be distinguished from
that of *Gl. tabaniformis* by the shorter fringe of fine hairs on the
anterior edge of the third segment (fig. 3). The ratio of the length of the
longest fringe-hairs to the greatest width of the segment was determined

in four specimens of each of the above-named species. They are tabulated below :

<i>Gl. schwetzi</i> , sp. n.	1 : 5·9	1 : 6·2	1 : 7·1	1 : 7·5
<i>Gl. tabaniformis</i>	1 : 3·7	1 : 4·1	1 : 4·3	1 : 4·3

COMPARATIVE TABLE OF THE MORPHOLOGICAL CHARACTERS OF THE MALE GENITAL ARMATURE

	<i>Gl. schwetzi</i> Fig. 1	<i>Gl. tabaniformis</i> Fig. 1, no. 3
Harpes :		
Proximal process ...	A stout spine, one-fourth length of second.	Slender and equal in length to the second.
Second process...	Slender.	The same.
Third process (distal) ...	Long, slender and simple.	Long and strongly bifurcate.

COMPARATIVE TABLE OF THE MORPHOLOGICAL CHARACTERS OF THE FEMALE GENITAL ARMATURE

	<i>Gl. schwetzi</i> Fig. 2	<i>Gl. tabaniformis</i>
Signum of uterus... ..	With a bilateral pair of black curved thickenings.	Lyriform. No bilateral curved thickenings.
Long axis	Transverse.	Longitudinal.

GLOSSINA FUSCA var. CONGOLENSIS, var. nov.

Colour and pattern generally as in typical Gl. fusca, Walker, but the wings are usually more heavily infuscated. Harpes of male (fig. 4) with the proximal process reaching to the tip of the second (serrated) process. Bilateral portions of the signum of the uterus of the female sub-rotund.

MALE : *Genital armature* (fig. 4). Harpes (*h*) with the narrow proximal process reaching to the tip of the second, serrated process ; the latter relatively narrow, and more or less suddenly truncate distally ; the third, a somewhat sickle-shaped appendage, with the distal arm very much shorter than the proximal one.

FEMALE : *Genital armature*. In the signum of the uterus (fig. 5) the width is greater than the length ; the bilaterally symmetrical plates forming the main portion of the signum sub-rotund, and separated medially by only a very shallow depression.

The foregoing description, and also the illustrations which accompany it are based upon fourteen examples, representing both sexes, captured in

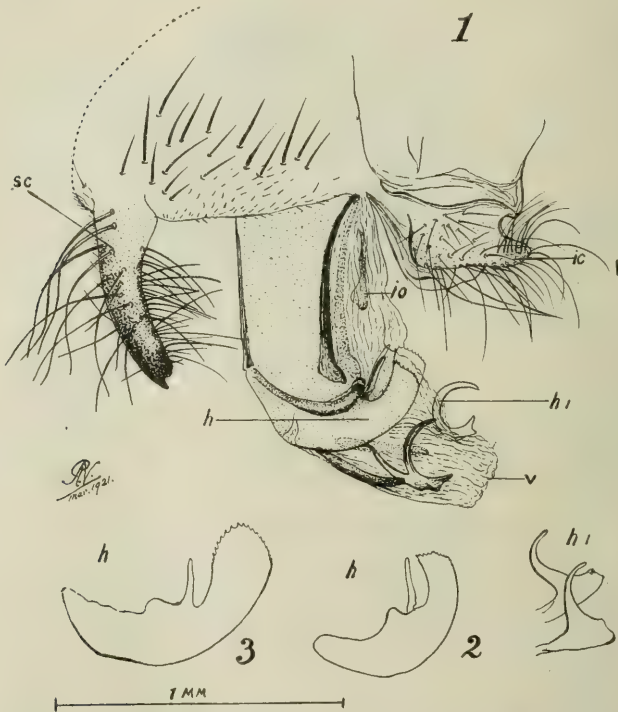


FIG. 4. (1) and (2) Male armature of *Glossina fusca* var. *congolensis*, var. n.
(3) Harpes of *Glossina fusca*.

s.c., superior clasper; i.c., inferior clasper; v., vesica; h., harpes; i.o., intromittent organ;
h.i., sickle-shaped process of harpes.

the Katombe, and in the Lomami-Kisengwa districts of the Belgian Congo by Dr. J. Schwetz.

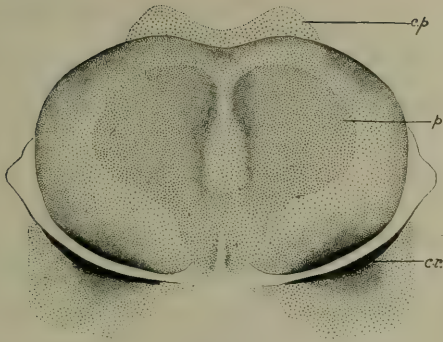


FIG. 5. *Glossina fusca* var. *congolensis*, var. n. ♀. Signum \times c. 155.
c.p., anterior plate; *cr.*, crescentic thickening; *p.*, petaloid area. (Genital fossae not shown.)

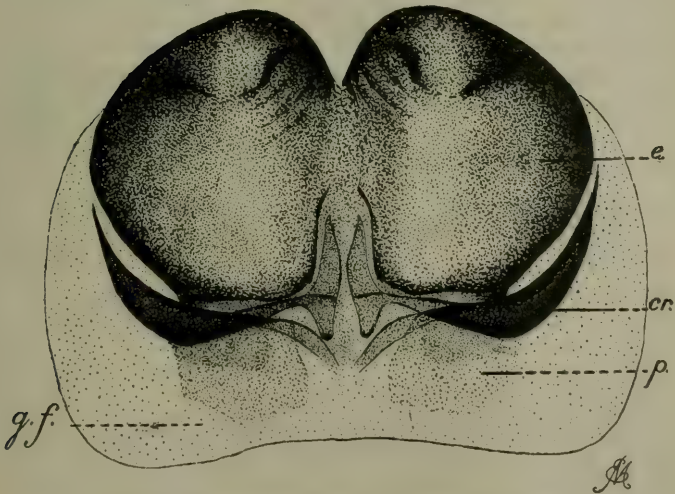


FIG. 6. *Glossina fusca*, Walker. ♀. Signum \times c. 155.
cr., crescentic sclerite; *e.*, half of main portion of signum; *g.f.*, genital fossae; *p.*, posterior plate.

COMPARATIVE TABLE OF THE MORPHOLOGICAL CHARACTERS OF THE MALE GENITAL ARMATURE

	<i>G. fusca</i> Fig. 4, no. 3	<i>G. fusca var. congolensis</i> Fig. 4, no. 1, 2
Harpes :		
Proximal process ...	Reaching to the middle distance of the serrated process.	Reaching to the tip of the serrated process.
Serrated process ...	Distally broadly lanceolate; shaft relatively broad.	Distally suddenly truncate; shaft relatively narrow.
Distal process ...	Distal arm of sickle-shaped process as long as the proximal one.	Distal arm less than half the length of the proximal one.

COMPARATIVE TABLE OF THE MORPHOLOGICAL CHARACTERS OF THE FEMALE GENITAL ARMATURE

	<i>Gl. fusca</i> Fig. 6	<i>Gl. fusca var. congolensis</i> Fig. 5
Signum		
Halves of main portion ...	Sub-conical. Very markedly convex, separated anteriorly by deep V-shaped depression extending to nearly one-third of their depth.	Sub-rotund. Slightly convex, separated anteriorly by very shallow depression.
Chitinisation	Generally complete, the colour varying from deep ochraceous to black.	Generally incomplete, ochraceous petaloid area (<i>p.</i>) often surrounded by considerable almost colourless area.
Anterior plate (<i>c.p.</i>) ...	Absent.	Generally present.
Greatest width	Average 0.56. Extremes 0.60, 0.46.	Average 0.42. Extremes 0.44, 0.40

REFERENCES

- 1.—NEWSTEAD, R. (1911). *Bull. Ent. Research*, Vol. II, pp. 9-36.
- 2.—EVANS, ALWEN M. (1919). *Ann. Trop. Med. Parasit.*, Vol. XIII, pp. 31-56.
- 3.—AUSTEN, ERNEST EDWARD (1911). A handbook of the Tsetse-Flies (genus *Glossina*).